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AGE AND GENDER DIFFERENCES IN OPTIC DISC AREA, CUP AREA AND VERTICAL CUP-TO-DISC RATIO? THE ROTTERDAM STUDY.

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Purpose: To investigate cross-sectionally the association of age and gender with optic disc area, cup area (adjusted for optic disc area) and vertical cup-to-disc ratio.

Methods: In the Rotterdam Study, a cohort study in a Caucasian population of 55 years and older, simultaneous stereo photographs (using the Topcon TRC-SS20) were made of both optic discs of all 6782 ophthalmologically examined participants. Semi-automated measurements of optic disc parameters using the Topcon Imagenet System were performed on one at random selected eye of each of 1165 at random selected participants. Stratification in a younger (aged 55-74 yrs) and older (aged 75 yrs and over) age group was applied in the statistical analysis.

Results: The disc area for younger men was 2.38 ± 0.026 mm^2 (SD 0.4366), for younger women 2.28 ± 0.02 mm^2 (SD 0.43), for older men 2.38 ± 0.05 mm^2 (SD 0.48) and older women 2.41 ± 0.04 mm^2 (SD 0.52). In women there was a significant association between age and disc area ($P < 0.0005$), but not in men. A gender difference in disc area existed only in the young age group. No significant age and gender differences were found for the cup area and vertical cup-to-disc ratio.

Conclusion: High age is associated with a large disc area in women, but not in men, which can not be explained yet. No age and gender differences were observed for the cup area and vertical cup-to-disc ratio.

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COMPARISON BETWEEN FUNDUSCOPICALLY AND AUTOMATED MEASUREMENT OF CUP- TO DISC RATIO.

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Purpose: Aim of this study was to compare funduscopic assessment of the vertical cup- to disc ratio (VCDR) of the optic nerve head with automated measurement using the Topcon Imagenet System.

Methods: In the Rotterdam Study, a population-based cohort study, 6782 participants underwent a complete ophthalmological examination. During this examination VCDR was estimated with direct ophthalmoscopy. Now VCDR is measured with the automated Topcon Imagenet System, using stereo optic disc photographs (Topcon TRC-SS20), which were made in the Rotterdam Study. These Imagenet measurements now have been performed in 523 subjects. Only right eyes were used in these analyses.

Results: Mean VCDR was 0.28 when estimated with direct ophthalmoscopy compared to 0.49 when measured with the Topcon Imagenet System ($p < 0.01$). In the subgroups with a VCDR of 0.0 to 0.6, estimated with ophthalmoscopy, we found a higher VCDR with the Imagenet System ($p < 0.01$). In the subgroups with a VCDR > 0.6 (ophthalmoscopy) we found a lower VCDR with the Imagenet System ($p < 0.01$).

Conclusion: Automated optic disc measurements using stereoscopic optic disc photographs results in a overestimation of the VCDR in the eyes with VCDR ≤ 0.6 and an underestimation in eyes with VCDR > 0.6.

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IMPLICATION OF INTRAOCULAR PRESSURE REGULATION ON OPTIC NERVE HEAD DAMAGE IN OPEN ANGLE GLAUCOMA

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Purpose: To examine the role of different parameters of intraocular pressure (IOP) on the progression of optic nerve head (ONH) damage.

Methods: Sixty-nine newly diagnosed high-pressure glaucoma were treated and followed by day-time IOP-curve every second month for a follow-up of 24 months. Stereophotographs of the ONH were taken at 0, 12 and 24 months and evaluated in a masked fashion as to patient identity and time of photograph.

Results: Progression of ONH damage was observed in 21 out of 69 patients. This progression was significantly more correlated to range and peak of IOP than to mean IOP.

Conclusions: The prognosis for further ONH-damage can be improved by IOP-regulation, specifically by diminishing range and peak of IOP.

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Optic disc morphology in diabetes mellitus

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Background: Diabetes mellitus is a systemic disease affecting multiple tissues throughout the body. This study was performed to evaluate intravitally the diabetic changes of the optic disc. Methods: Color photographs of 115 eyes with varying severity of diabetic retinopathy and of 29 normal eyes were morphometrically examined. Results: We found that the size and shape of the optic disc, the neuroretinal rim and the parapapillary atrophy did not differ significantly between the diabetic eyes and the normal eyes. These variables were independent of the degree of diabetic retinopathy. There was a tendency toward decreased visibility of the retinal nerve fiber layer and increased optic disc pallor in the diabetic eyes. Conclusion: The results indicate that the area and form of the optic disc, the neuroretinal rim and parapapillary atrophy are not altered by diabetes mellitus. This is important for the diagnosis of glaucoma in diabetic patients, since glaucoma leads to a decrease of rim area and an enlargement of parapapillary atrophy. The reduced visibility of the retinal nerve fiber layer, the increased optic disc pallor and the unchanged size of the neuroretinal rim and parapapillary atrophy suggest that diabetes mellitus may be associated with nonglaucomatous optic nerve atrophy.